

Wisconsin Checklist Project 2003

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Abstract

During 1987-2002, project cooperators submitted 59,591 weekly checklists of birds they saw or heard. During this period the frequency of occurrence decreased significantly for 54 species, increased significantly for 64 species, exhibited a u-shaped trend for 6 species, and an inverted u-shaped trend for 50 species. Reporting frequencies were classified as stable for 92 species.

Background

The Wisconsin Checklist Project (WCP) is a volunteer monitoring program that provides information on annual, seasonal, and geographic variation in abundance for 296 species of birds that occur in Wisconsin. The project originated in 1982 at the University of Wisconsin and has been administered by the Wisconsin Department of Natural Resources (DNR) since 1989. Data from 1982-96 were used to estimate relative abundance, geographic distribution, migration chronology, and population trend (Temple, Cary, and Rolley 1997). Currently, the project is primarily used to monitor long-term changes in abundance.

Methods

Checklist project volunteers were recruited primarily from the Wisconsin Society for Ornithology; an educational and scientific organization dedicated to the study of Wisconsin birds. Participants were requested to maintain careful records of the bird species detected each week. Participants recorded their name, the date of the Sunday that began the week, the county in which they birded, whether they "actively" searched for birds during the week, and the bird species detected, on computer readable "bubble forms". Completed forms were returned to the DNR's Research Center in Monona, Wisconsin. Upon receipt of completed forms, a new supply of forms was mailed to project cooperators. Completed forms were scanned by the University of Wisconsin's Testing and Evaluation Services.

Prior to 1997, checklist forms listed 266 species. Thirty species were added to the checklist in 1997. The percentage of checklists on which a species is recorded (reporting frequency) is used as an index of abundance. Reporting frequencies during 1987-2002 of the original set of 266 species were examined for linear and quadratic trends using regression analysis. Checklists from all regions of the state and from all months of the year were pooled in these analyses. Trends were classified as stable if regression significance levels were ≥ 0.05 .

Results

Since initiation of the Wisconsin Checklist Project, 432 project cooperators have submitted 89,014 checklists. Only 59,591 checklists for the period 1987-2002 were analyzed for this report. A total of 27,254 checklists have been submitted for years prior to 1987 and 2,169 checklists have been received to date for 2003 and 2004. The number of cooperators contributing checklists and the number of checklists submitted per year have declined since the start of the project with the most rapid decline during the mid 1980s (Table 1). With the decline in number of cooperators, both the percentage of checklists on which contributors indicated that

they actively searched for birds and the mean number of species recorded per checklist tended to increase during the mid 1980s through early 1990s. The mean number of species reported and the percentage of active checklists have been fairly stable since the early 1990s.

Significant linear declines in percent occurrence on checklists during 1987-2002 were noted for 54 species (Table 2). These were American Bittern, Least Bittern, Yellow-crowned Night-Heron, Northern Pintail, American Wigeon, Oldsquaw, Broad-winged Hawk, American Kestrel, Gray Partridge, Ruffed Grouse, Sharp-tailed Grouse, Killdeer, Upland Sandpiper, Ruddy Turnstone, Short-billed Dowitcher, Common Snipe, American Woodcock, Wilson's Phalarope, Common Tern, Black Tern, Rock Dove, Black-billed Cockoo, Yellow-billed Cockoo, Eastern Screech-owl, Common Nighthawk, Whip-poor-will, Chimney Swift, Belted Kingfisher, Red-headed Woodpecker, Northern Flicker, Great Crested Flycatcher, Horned Lark, Purple Martin, Barn Swallow, Gray Jay, Boreal Chickadee, Brown Thrasher, European Starling, Louisiana Waterthrush, Kentucky Warbler, Field Sparrow, Vesper Sparrow, Fox Sparrow, Eastern Meadowlark, Western Meadowlark, Yellow-headed Blackbird, Rusty Blackbird, Brewer's Blackbird, Common Grackle, Purple Finch, Red Crossbill, Pine Siskin, Evening Grosbeak, and House Sparrow.

Reporting frequencies increased significantly during 1987-2002 for 64 species. Species exhibiting highly significant ($P < 0.001$) increases were Canada Goose, Mallard, Turkey Vulture, Bald Eagle, Cooper's Hawk, Red-tailed Hawk, Merlin, Ring-necked Pheasant, Wild Turkey, Sandhill Crane, Ring-billed Gull, Ruby-throated Hummingbird, Red-bellied Woodpecker, Downy Woodpecker, Hairy Woodpecker, Pileated Woodpecker, Eastern Phoebe, Black-capped Chickadee, Tufted Titmouse, Blue-gray Gnatcatcher, Eastern Bluebird, American Pipit, Red-eyed Vireo, Northern Cardinal, Chipping Sparrow, Clay-colored Sparrow, White-crowned Sparrow, and Orchard Oriole.

Fifty species had inverted u-shaped trends in reporting rates (increasing during the late 1980s to mid 1990s and subsequently decreasing). These were Horned Grebe, Cattle Egret, Wood Duck, Green-winged Teal, American Black Duck, Blue-winged Teal, Northern Shoveler, Ring-necked Duck, Greater Scaup, Lesser Scaup, Common Goldeneye, Bufflehead, Common Merganser, Red-breasted Merganser, Ruddy Duck, Red-shouldered Hawk, Spotted Sandpiper, Bonaparte's Gull, Herring Gull, Glaucous Gull, Caspian Tern, Forster's Tern, Mourning Dove, Willow Flycatcher, Least Flycatcher, Cliff Swallow, Brown Creeper, Winter Wren, Marsh Wren, Veery, Gray-cheeked Thrush, Swainson's Thrush, Hermit Thrush, Golden-winged Warbler, Nashville Warbler, Blackburnian Warbler, Blackpoll Warbler, Black-and-white Warbler, American Redstart, Prothonotary Warbler, Northern Waterthrush, Common Yellowthroat, Canada Warbler, American Tree Sparrow, Lark Sparrow, Savannah Sparrow, Song Sparrow, Swamp Sparrow, Bobolink, and Brown-headed Cowbird.

Significant u-shaped trends in reporting frequencies (decreasing during the late 1980s to mid 1990s and subsequently increasing) were observed for 6 species: Red-throated Loon, Red-necked Grebe, Greater Prairie-chicken, Bohemian Waxwing, Henslow's Sparrow, and Harris' Sparrow.

Reporting frequencies were classified as stable for 92 species (linear or quadratic models did not explain a significant portion of the annual variation in reporting rates). However, several of these species did exhibit considerable variation in reporting frequencies. This was particularly notable for irruptive winter finches. For example, reporting rates of Common Redpoll reached highs in 1990 (8.0), 1992 (7.6), and 1996 (12.5) but were as low as 2.3% in 1993 and 2.1% in

2001. Pine Grosbeak and White-winged Crossbill and showed similar erratic fluctuations in reporting rates.

Changes in cooperator activity may have affected species reporting frequencies. The potential confounding influence of cooperator activity should be kept in mind when interpreting trends in reporting rates.

Acknowledgments

This project would not have been possible without the efforts of the 432 volunteers who contributed checklists. Their dedication to the birds of Wisconsin is greatly appreciated. Additionally, I am grateful for the efforts of Stanley and Anita Temple and John Cary who originated the checklist project and maintained it during its first six years.

Literature Cited

Temple, S. A., J. R. Cary, and R. E. Rolley. 1997. Wisconsin birds: a seasonal and geographical guide, 2nd Edition. University of Wisconsin Press, Madison, WI. 320pp.

Table 1. Number of Wisconsin Checklist Project cooperators, number of checklists submitted, percent of checklists that represented active birding, and mean number of species reported per checklist during 1983-2002.

Year	No. of cooperators	No. of Checklists	% active	Mean no. of species
1983	237	8,553	46.3	28.4
1984	169	6,037	46.9	27.9
1985	143	4,988	41.2	27.9
1986	128	5,180	41.1	28.1
1987	117	5,127	46.1	28.4
1988	114	4,767	44.3	28.7
1989	106	3,978	49.5	29.6
1990	120	4,234	51.3	30.7
1991	90	3,683	55.9	32.8
1992	80	3,301	56.6	32.3
1993	95	4,001	54.0	32.2
1994	103	4,233	53.6	32.6
1995	95	3,951	54.2	32.6
1996	92	3,850	55.5	32.4
1997	83	3,627	59.2	31.7
1998	80	3,490	53.7	32.4
1999	77	3,241	50.1	31.3
2000	66	2,887	50.3	31.2
2001	60	2,668	50.7	32.0
2002	61	2,553	54.7	33.1

Table 2. Percentage of WCP checklists on which each species was reported during 1987-2002. Trends were estimated by regression analysis.

Species	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	Trend ^a
Red-throated Loon	0.5	0.2	0.1	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.4	ushp***
Common Loon	5.9	6.2	6.6	5.9	6.1	6.6	7.3	6.7	7.1	7.4	6.3	6.1	5.9	5.2	5.9	8.1	stbl
Pied-billed Grebe	12.3	12.2	11.1	8.6	12.3	10.7	12.1	14.7	14.0	16.0	14.3	14.3	13.1	13.2	9.2	11.8	stbl
Horned Grebe	1.8	1.3	1.4	1.3	1.9	2.5	2.7	1.8	1.7	2.1	2.2	3.1	2.0	0.9	1.3	1.2	invu*
Red-necked Grebe	1.3	0.8	1.0	0.5	0.5	0.5	0.8	0.5	0.8	0.5	0.4	0.4	0.5	0.6	1.1	0.5	ushp*
Eared Grebe ^b											0.1	0.4	0.3	0.3	0.3	0.4	
Western Grebe ^b										0.0	0.1	0.0	0.1	0.0	0.0	0.1	
American White Pelican ^b										1.0	2.1	2.4	3.1	3.8	3.8		
Double-crested Cormorant	6.4	6.2	6.8	7.8	11.8	11.6	11.5	11.7	10.9	13.2	11.5	13.4	12.3	10.5	9.8	11.2	incr**
American Bittern	2.5	2.7	2.6	2.7	3.3	2.3	2.7	2.0	2.3	2.1	1.9	1.9	1.0	0.8	1.7	2.0	decr***
Least Bittern	0.6	0.8	0.8	0.8	1.2	0.9	0.6	0.7	0.2	0.4	0.5	0.4	0.5	0.3	0.4	0.4	decr**
Great Blue Heron	26.1	27.4	30.1	30.9	35.4	33.7	32.8	35.3	31.7	33.9	34.1	32.6	31.9	33.4	33.0	33.5	incr*
Great Egret	3.2	3.7	5.5	4.5	6.5	5.7	4.6	5.6	4.0	3.8	5.6	3.7	5.9	5.8	6.1	7.7	incr*
Snowy Egret ^b										0.7	0.6	0.7	0.8	1.1	0.9		
Little Blue Heron ^b										0.1	0.1	0.1	0.0	0.0	0.0	0.0	
Cattle Egret	0.3	0.1	0.3	0.8	0.8	0.9	1.5	1.2	0.5	0.9	0.4	0.4	0.3	0.2	0.2	0.3	invu**
Green Heron	10.6	11.6	13.1	12.9	14.8	12.2	12.1	11.2	9.6	10.4	9.6	10.7	11.2	11.6	11.6	11.3	stbl
Black-crowned Night-heron	1.9	2.4	2.7	3.6	6.0	5.0	3.9	4.2	3.5	4.3	2.8	3.0	3.1	3.2	3.3	3.8	stbl
Yellow-crowned Night-heron	0.4	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	decr*
Tundra Swan	3.8	3.5	4.2	4.4	5.0	5.5	3.7	4.4	4.4	3.6	3.8	4.6	5.7	5.7	5.3	5.4	incr*
Trumpeter Swan ^b										0.6	1.4	0.7	0.9	1.7	1.7		
Mute Swan	2.7	5.2	3.4	2.8	4.6	5.4	3.3	4.1	4.9	4.6	3.2	5.1	4.2	3.6	3.8	3.8	stbl
Greater White-fronted Goose ^b										0.2	0.5	0.4	0.7	0.4	0.5		
Snow Goose	1.7	1.7	2.8	2.6	2.6	2.5	2.5	2.2	1.5	1.8	1.1	1.8	2.5	1.8	1.8	1.9	stbl
Canada Goose	38.8	42.3	43.6	47.2	50.6	52.1	54.0	56.9	59.0	58.3	60.5	65.0	64.9	68.2	65.5	71.1	incr***
Wood Duck	19.2	18.6	18.7	20.6	23.2	22.2	21.1	25.1	25.9	23.0	20.8	21.7	20.1	17.0	17.8	19.5	invu***
Green-winged Teal	4.5	4.7	5.4	5.7	8.9	7.5	6.2	7.8	7.3	7.2	6.3	6.7	7.2	7.4	5.4	4.9	invu***
American Black Duck	8.1	8.1	10.2	9.8	13.2	14.9	13.2	11.2	11.4	11.6	8.6	7.5	8.5	7.7	6.6	7.3	invu**
Mallard	52.0	49.7	53.3	55.5	57.6	62.9	62.0	63.2	63.8	64.9	61.3	62.0	61.2	63.2	61.4	62.3	incr***
Northern Pintail	2.8	2.9	3.6	4.4	4.5	4.5	2.6	3.0	2.6	2.7	2.4	2.8	2.6	2.9	2.2	2.7	decr*
Blue-winged Teal	14.7	14.8	15.7	15.2	18.0	15.1	16.5	17.5	15.6	16.3	14.9	15.0	14.6	12.6	12.2	14.8	invu*
Northern Shoveler	3.8	6.5	7.0	7.0	8.6	7.7	8.2	7.9	8.1	8.1	7.3	7.1	7.9	7.8	6.8	8.0	invu**
Gadwall	2.3	3.1	4.1	4.4	6.0	6.3	5.5	4.5	4.4	4.2	4.7	4.2	5.5	5.3	5.4	5.3	incr*
American Wigeon	4.8	5.5	6.5	6.1	7.6	6.2	6.4	7.1	6.3	5.3	5.1	5.6	4.9	5.6	3.7	4.3	decr*
Canvasback	2.9	3.1	3.7	3.1	3.5	3.5	3.5	3.8	3.8	3.0	3.8	3.2	3.6	2.9	4.0	3.8	stbl
Redhead	3.9	3.8	4.1	3.9	6.1	5.5	5.8	5.1	5.0	5.7	6.0	5.1	5.5	4.5	4.4	6.5	stbl
Ring-necked Duck	6.9	6.6	9.0	7.2	8.7	9.2	9.2	9.9	10.4	9.0	7.2	6.8	6.8	6.7	6.0	7.0	invu**
Greater Scaup	3.4	4.0	4.4	4.0	4.8	5.3	4.8	3.9	4.2	5.2	4.9	3.9	5.2	3.2	2.8	3.8	invu*
Lesser Scaup	6.9	7.2	8.6	8.9	9.7	9.1	7.7	7.4	9.3	9.6	9.0	8.3	8.2	6.0	5.5	7.2	invu**
Oldsquaw	0.9	1.4	1.0	1.4	1.5	1.5	1.2	0.4	0.9	1.0	0.8	0.5	0.5	0.2	0.2	0.3	decr***
Black Scoter	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.3	0.2	0.2	0.3	0.2	0.2	0.3	incr*
Surf Scoter	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.1	0.2	0.3	0.2	0.2	0.5	0.1	0.4	0.4	incr*
White-winged Scoter	0.2	0.3	0.5	0.2	0.2	0.2	0.3	0.4	0.2	0.2	0.2	0.4	0.2	0.1	0.1	0.2	stbl

Table 2. Continued.

Species	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	Trend
Common Goldeneye	8.3	10.0	9.6	9.1	10.5	11.5	11.3	8.4	9.1	10.8	9.9	8.9	9.2	6.3	7.9	8.6	invu*
Bufflehead	7.0	8.5	10.2	9.1	9.7	10.7	10.8	10.5	11.7	11.1	10.2	9.8	11.3	8.1	8.8	10.6	invu**
Hooded Merganser	4.0	5.4	6.2	4.8	6.6	6.9	7.1	7.0	8.7	9.1	8.1	7.3	7.2	5.4	6.2	9.0	incr*
Common Merganser	5.7	6.2	6.9	6.8	7.7	10.7	11.5	9.4	9.6	11.4	10.1	9.7	8.4	6.4	7.7	9.2	invu**
Red-breasted Merganser	3.9	4.8	5.1	5.2	7.1	7.0	7.5	5.5	4.6	5.1	4.9	5.0	5.2	3.5	3.2	3.1	invu**
Ruddy Duck	5.3	4.4	5.9	4.8	7.3	6.8	6.7	5.9	6.1	6.7	6.5	7.4	7.3	5.9	4.5	6.3	invu*
Turkey Vulture	11.7	10.7	10.8	14.0	14.7	14.5	15.6	20.5	20.2	20.3	22.3	24.0	23.2	24.4	26.1	26.1	incr***
Osprey	3.3	4.0	3.9	3.9	5.4	5.5	5.8	5.1	5.0	5.2	5.7	5.9	4.0	4.3	5.3	6.5	incr*
Bald Eagle	8.0	9.9	8.6	7.9	9.6	11.3	12.2	13.4	15.8	15.0	16.1	16.7	15.4	16.9	19.5	23.5	incr***
Northern Harrier	13.9	13.8	14.0	14.2	16.0	16.2	15.5	18.9	19.1	17.6	15.9	18.5	17.4	16.1	16.8	18.4	incr**
Sharp-shinned Hawk	6.9	7.7	7.7	6.8	9.4	8.3	8.5	9.1	10.0	8.6	8.7	9.3	7.9	8.5	9.4	9.6	incr**
Cooper's Hawk	3.8	4.9	7.0	8.6	11.8	11.6	12.5	12.1	13.8	13.6	15.3	16.1	15.7	17.9	18.4	20.0	incr***
Northern Goshawk	0.9	0.7	1.2	1.8	2.0	2.4	2.6	2.0	1.1	0.9	0.8	0.9	0.6	0.9	1.0	1.6	stbl
Red-shouldered Hawk	1.9	2.0	2.2	2.3	3.1	3.4	3.6	3.3	3.1	3.0	3.2	3.7	2.4	2.0	1.1	1.8	invu***
Broad-winged Hawk	6.0	5.7	4.7	5.7	6.6	5.8	6.2	6.2	5.2	5.4	4.2	5.4	4.1	3.8	3.6	4.3	decr**
Red-tailed Hawk	44.0	45.3	42.4	45.9	50.6	50.3	49.6	57.1	56.2	51.3	52.2	51.2	52.0	53.9	55.2	54.3	incr***
Rough-legged Hawk	9.1	8.2	7.0	7.7	11.4	9.0	7.5	7.1	10.3	7.4	8.0	7.6	9.7	10.7	6.7	6.6	stbl
Golden Eagle ^b											0.1	0.0	0.0	0.1	0.4	0.4	
American Kestrel	45.1	45.1	45.0	45.8	50.8	52.0	48.6	47.1	48.3	40.4	39.6	38.9	39.6	39.4	37.7	41.8	decr**
Merlin	0.7	0.9	1.2	1.4	1.6	1.6	1.7	2.0	2.2	2.2	1.6	2.6	1.5	1.7	2.2	2.3	incr***
Peregrine Falcon	0.4	0.6	0.6	1.3	0.8	1.1	1.1	1.0	1.0	1.3	0.8	1.3	1.7	1.6	1.1	1.1	incr**
Gray Partridge	1.8	2.1	2.5	1.8	2.2	1.5	1.0	1.3	1.0	0.9	1.1	1.1	0.4	0.6	0.1	0.1	decr***
Ring-necked Pheasant	14.3	13.9	15.0	14.9	14.9	13.6	15.0	15.8	16.1	14.9	15.7	15.6	16.9	17.5	18.9	18.5	incr***
Spruce Grouse ^b											0.0	0.1	0.0	0.0	0.0	0.0	
Ruffed Grouse	18.7	17.8	18.2	14.7	12.6	12.2	11.3	10.4	12.7	12.3	12.7	15.0	11.9	13.8	13.0	13.4	decr*
Greater Prairie-chicken	1.1	1.3	1.5	0.6	1.4	0.9	0.7	0.6	0.4	0.7	0.5	1.2	0.6	1.1	1.0	0.9	ushp*
Sharp-tailed Grouse	0.9	0.5	1.0	0.2	0.2	0.1	0.5	0.5	0.8	0.4	0.1	0.1	0.1	0.1	0.2	0.2	decr*
Wild Turkey	2.5	3.3	3.6	5.1	8.3	7.0	9.4	10.7	14.1	14.2	16.1	18.3	21.5	22.0	28.1	26.6	incr***
Northern Bobwhite	2.2	2.6	2.2	2.9	3.8	2.6	2.6	2.2	2.3	1.8	2.3	1.9	1.8	3.2	2.4	1.3	stbl
Yellow Rail ^b											0.1	0.3	0.3	0.2	0.3	0.2	
King Rail ^b											0.0	0.1	0.0	0.1	0.2	0.0	
Virginia Rail	1.2	0.9	1.0	0.6	1.3	1.6	1.0	1.3	1.1	1.4	1.2	1.4	1.1	0.5	0.8	1.1	stbl
Sora	3.6	3.4	3.8	4.1	5.1	4.0	4.6	4.3	3.3	4.4	3.8	4.5	3.3	2.0	3.1	5.4	stbl
Common Moorhen	1.8	1.2	1.2	0.9	1.8	1.8	0.7	2.2	1.5	1.1	1.0	1.4	1.6	0.6	0.8	0.9	stbl
American Coot	14.7	13.1	14.6	13.6	16.1	14.8	12.3	15.4	16.2	18.6	19.7	17.9	17.0	15.2	13.2	15.6	stbl
Sandhill Crane	15.2	17.7	18.2	18.9	20.9	21.1	23.2	23.7	24.6	26.2	29.0	33.5	31.1	33.9	35.9	35.6	incr***
Black-bellied Plover	0.9	0.8	1.1	0.8	1.6	1.5	1.2	1.1	0.8	0.9	0.4	1.0	0.7	1.0	0.8	0.8	stbl
American Golden-plover	0.6	0.6	0.7	0.5	0.8	0.9	0.6	0.8	0.4	0.4	0.8	1.0	0.7	1.0	1.0	0.5	stbl
Semipalmated Plover	2.3	2.3	1.5	1.4	2.4	2.8	1.4	2.2	1.0	1.4	1.3	1.7	1.5	1.5	2.0	1.7	stbl
Piping Plover ^b											0.0	0.0	0.0	0.0	0.1	0.1	
Killdeer	43.7	39.8	40.4	41.3	40.3	39.4	37.6	40.6	37.3	35.6	36.7	34.7	33.6	34.1	33.3	33.1	decr***
American Avocet ^b											0.0	0.0	0.1	0.1	0.1	0.0	
Greater Yellowlegs	3.6	4.4	4.1	3.0	4.3	4.6	3.2	4.7	3.5	4.8	3.5	3.7	3.4	3.1	3.9	5.2	stbl

Table 2. Continued.

Species	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	Trend
Lesser Yellowlegs	5.1	5.2	5.7	4.1	5.6	5.6	3.4	5.4	4.4	5.6	4.9	4.9	4.2	4.4	4.8	5.8	stbl
Solitary Sandpiper	2.6	2.9	3.1	2.9	3.9	3.3	2.4	3.6	2.5	3.2	2.8	3.0	2.3	2.3	2.6	2.9	stbl
Willet	0.1	0.3	0.1	0.3	0.1	0.1	0.1	0.3	0.1	0.3	0.2	0.1	0.1	0.1	0.1	0.4	stbl
Spotted Sandpiper	5.7	5.6	5.8	6.6	8.1	7.2	6.4	7.5	6.4	8.0	6.3	6.1	4.6	4.3	5.0	5.3	invu**
Upland Sandpiper	1.5	1.7	1.5	1.6	2.0	1.6	1.4	1.8	1.4	1.2	1.2	1.6	1.3	1.0	1.1	1.3	decr**
Whimbrel ^b											0.0	0.0	0.1	0.0	0.0	0.0	
Hudsonian Godwit	0.1	0.4	0.2	0.1	0.0	0.3	0.1	0.1	0.0	0.2	0.2	0.2	0.2	0.3	0.0	0.2	stbl
Marbled Godwit	0.1	0.2	0.1	0.1	0.1	0.2	0.1	0.3	0.1	0.2	0.1	0.1	0.1	0.4	0.2	0.2	stbl
Ruddy Turnstone	0.6	0.6	0.4	0.4	1.0	0.9	0.9	0.3	0.5	0.4	0.4	0.4	0.3	0.3	0.2	0.4	decr*
Red Knot	0.2	0.1	0.1	0.1	0.1	0.2	0.3	0.1	0.2	0.1	0.0	0.0	0.1	0.2	0.1	0.4	stbl
Sanderling	0.8	0.6	0.8	0.9	0.9	0.6	0.9	0.5	0.6	0.8	0.3	0.8	0.8	0.8	0.8	0.8	stbl
Semipalmed Sandpiper	2.1	2.3	1.7	2.1	3.2	3.1	1.5	2.2	1.3	2.1	1.3	1.8	1.3	1.9	1.5	1.8	stbl
Western Sandpiper ^b											0.1	0.1	0.1	0.0	0.1	0.1	
Least Sandpiper	2.6	2.7	2.6	2.7	3.9	4.2	2.4	2.4	2.1	3.0	2.3	2.7	2.5	2.6	2.4	3.0	stbl
White-rumped Sandpiper	0.5	0.2	0.3	0.3	0.4	0.5	0.4	0.3	0.3	0.6	0.3	0.4	0.5	0.4	0.5	0.3	stbl
Baird's Sandpiper	0.8	0.7	0.3	0.5	0.9	1.0	0.5	0.6	0.4	0.7	0.4	0.7	0.7	0.4	0.8	0.4	stbl
Pectoral Sandpiper	3.4	3.8	2.4	1.8	4.3	3.3	1.4	2.4	1.7	2.2	1.3	2.3	2.6	2.8	2.3	2.6	stbl
Dunlin	1.8	1.1	1.2	1.6	3.1	2.5	1.7	2.1	1.5	1.8	1.5	1.6	1.7	2.2	1.6	2.0	stbl
Stilt Sandpiper	0.7	0.6	0.5	0.2	0.8	0.6	0.2	0.5	0.3	0.5	0.4	0.3	0.5	0.4	0.5	0.4	stbl
Buff-breasted Sandpiper ^b											0.1	0.3	0.2	0.1	0.4	0.3	
Ruff ^b											0.0	0.0	0.0	0.0	0.0	0.0	
Short-billed Dowitcher	1.6	1.7	1.4	1.3	2.2	1.7	0.9	1.5	0.9	1.4	0.9	1.2	1.1	1.1	0.9	1.1	decr**
Long-billed Dowitcher	0.4	0.4	0.3	0.3	1.0	0.7	0.2	0.2	0.3	0.3	0.2	0.3	0.5	0.5	0.2	0.4	stbl
Common Snipe	8.3	7.5	7.5	5.6	8.8	6.4	7.7	6.9	5.6	6.4	4.6	6.8	6.0	4.3	6.1	5.1	decr**
American Woodcock	5.8	5.2	5.2	4.4	5.3	5.0	4.8	5.2	4.2	4.0	3.9	4.9	4.5	4.1	4.8	3.7	decr**
Wilson's Phalarope	1.0	1.0	0.8	0.7	1.4	1.0	0.7	1.0	0.3	0.8	0.3	0.6	0.2	0.5	0.5	1.0	decr*
Red-necked Phalarope	0.2	0.0	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.2	0.1	0.2	0.0	stbl
Laughing Gull ^b											0.0	0.0	0.0	0.0	0.0	0.0	
Franklin's Gull	0.1	0.1	0.1	0.2	0.6	0.2	0.2	0.2	0.2	0.4	0.1	0.1	0.3	0.1	0.1	0.2	stbl
Little Gull ^b											0.0	0.1	0.0	0.0	0.1	0.0	
Bonaparte's Gull	3.3	2.8	2.8	3.6	4.8	3.5	4.4	4.5	4.4	2.8	3.6	4.4	3.5	3.5	2.9	2.9	invu*
Ring-billed Gull	27.1	24.8	27.2	29.9	35.6	35.0	39.3	38.6	38.2	34.7	39.7	46.1	38.9	42.5	39.7	39.2	incr***
Herring Gull	19.2	16.8	16.2	21.3	26.2	27.1	26.4	27.3	25.2	25.0	25.6	26.3	22.0	22.0	22.9	26.3	invu**
Thayer's Gull ^b											0.1	0.2	0.1	0.1	0.1	0.1	
Iceland Gull ^b											0.0	0.1	0.1	0.0	0.0	0.0	
Glaucous Gull	0.4	0.4	0.4	0.6	0.8	0.9	0.9	0.4	0.6	0.8	0.8	0.9	0.4	0.3	0.3	0.2	invu**
Greater Black-backed Gull ^b											0.1	0.7	0.6	0.6	0.5	0.3	
Caspian Tern	1.6	1.9	2.1	3.9	4.9	4.4	4.0	3.9	4.1	4.3	3.5	3.5	3.7	3.6	3.2	3.4	invu***
Common Tern	2.8	3.1	2.9	3.0	2.7	3.4	3.3	3.1	2.8	3.0	3.0	1.8	1.5	1.8	2.0	2.0	decr**
Forster's Tern	1.5	1.9	2.2	3.4	4.5	4.6	4.2	3.7	3.3	3.7	3.2	3.0	2.5	3.0	2.7	3.8	invu*
Black Tern	5.1	5.9	6.0	4.5	5.2	5.1	6.0	5.8	4.7	4.5	4.3	3.6	3.3	2.2	3.3	3.8	decr***
Rock Dove	73.8	72.4	72.6	70.9	72.8	73.7	74.1	73.1	74.0	72.3	71.5	69.9	65.8	65.5	64.0	63.3	decr***
Mourning Dove	76.4	79.2	83.7	85.3	86.0	85.8	84.5	83.7	85.2	84.5	81.9	83.0	82.5	85.8	83.0	85.0	invu*

Table 2. Continued.

Species	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	Trend
Black-billed Cuckoo	4.1	4.8	4.2	3.7	6.9	5.6	3.2	2.7	3.3	3.0	4.4	4.3	2.4	2.0	2.8	2.8	decr*
Yellow-billed Cuckoo	1.8	3.3	2.4	1.4	2.8	2.4	1.1	1.0	0.9	1.2	1.9	1.7	2.0	1.1	1.3	1.1	decr*
Common Barn-owl	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	stbl
Eastern Screech-owl	2.5	2.4	2.5	2.6	4.0	2.9	2.8	2.2	3.1	1.8	1.1	1.5	1.6	1.2	2.3	2.4	decr*
Great Horned Owl	11.4	11.6	12.2	10.7	13.9	15.3	15.4	16.3	13.5	11.7	12.2	11.9	11.1	13.0	12.7	12.8	stbl
Snowy Owl	1.7	1.1	0.3	0.4	1.2	2.0	1.5	0.8	0.3	0.9	1.2	0.4	0.2	0.6	1.1	0.6	stbl
Barred Owl	11.2	8.4	8.5	8.9	9.3	9.7	10.6	9.5	10.4	9.3	8.6	10.3	8.2	8.1	8.9	6.0	stbl
Great Grey Owl	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.2	0.1	0.0	0.0	0.1	0.0	stbl
Long-eared Owl	0.2	0.1	0.4	0.1	0.1	0.2	0.2	0.3	0.3	0.1	0.3	0.2	0.2	0.1	0.3	0.4	stbl
Short-eared Owl	0.3	0.6	0.7	0.6	1.3	0.5	0.2	0.6	1.1	0.4	0.8	0.5	0.6	1.2	1.0	1.1	stbl
Northern Saw-whet Owl	0.1	0.2	0.5	0.5	0.5	0.7	0.6	1.2	0.5	0.4	0.6	0.6	0.6	0.6	0.6	0.9	stbl
Common Nighthawk	13.1	11.8	11.0	9.6	11.2	11.5	11.1	9.1	8.9	10.7	7.9	8.9	6.9	6.4	6.0	5.1	decr***
Whip-poor-will	4.3	3.8	3.9	3.8	3.9	4.1	3.4	3.5	3.2	2.4	2.6	4.3	3.5	2.8	3.6	2.7	decr*
Chimney Swift	21.6	21.1	20.7	20.2	23.3	21.3	19.5	19.4	18.5	19.0	17.8	18.0	16.2	15.8	17.9	18.6	decr***
Ruby-throated Hummingbird	11.7	15.5	13.4	14.5	16.7	16.7	16.5	19.0	18.4	21.0	22.4	22.0	23.0	25.3	24.9	26.4	incr***
Belted Kingfisher	21.0	21.1	22.7	21.0	22.2	20.9	21.0	20.6	20.1	20.2	18.4	21.2	21.0	18.9	18.6	19.7	decr**
Red-headed Woodpecker	14.3	12.1	12.9	14.6	13.2	12.2	11.4	10.7	10.0	8.9	8.0	7.1	6.5	4.4	5.7	6.5	decr***
Red-bellied Woodpecker	25.2	27.5	28.7	29.7	33.1	34.4	36.6	36.6	38.6	35.7	39.9	42.2	47.0	46.8	47.8	49.7	incr***
Yellow-bellied Sapsucker	7.0	7.0	6.9	8.4	6.7	7.2	6.8	8.7	8.5	7.4	7.7	9.2	7.3	6.4	6.0	9.2	stbl
Downy Woodpecker	62.5	66.0	65.8	66.0	67.4	67.7	67.1	68.5	68.8	68.9	70.1	75.4	75.6	77.0	75.4	75.6	incr***
Hairy Woodpecker	39.2	41.6	40.1	43.1	43.9	48.2	47.5	48.1	49.6	46.9	45.4	50.9	51.3	50.4	52.5	53.0	incr***
Black-backed Woodpecker ^b											0.1	0.1	0.1	0.2	0.2	0.2	
Northern Flicker	40.6	40.4	40.8	41.9	42.8	39.6	38.1	39.2	35.9	32.9	33.0	34.1	31.6	32.0	30.9	32.6	decr***
Pileated Woodpecker	11.8	12.5	13.8	14.8	13.8	14.0	14.1	14.8	16.2	16.5	15.3	17.8	15.4	15.7	18.1	18.5	incr***
Olive-sided Flycatcher	0.8	0.7	0.5	1.0	0.7	1.2	0.8	0.9	1.0	1.4	0.8	0.8	1.0	0.9	0.7	0.8	stbl
Eastern Wood-peewee	11.7	13.1	13.5	12.8	17.4	14.9	14.8	15.5	13.7	13.9	13.5	13.9	12.6	12.2	15.0	13.8	stbl
Yellow-bellied Flycatcher	0.6	0.5	1.0	0.9	0.7	1.1	1.1	1.2	1.0	1.6	1.6	1.0	0.7	0.5	1.0	1.4	stbl
Acadian Flycatcher	0.3	0.4	0.3	0.3	0.8	1.0	1.0	0.7	0.7	0.8	0.4	0.4	0.4	0.4	0.7	0.9	stbl
Alder Flycatcher	0.9	1.1	1.2	1.5	2.0	2.2	3.0	2.2	2.2	3.5	2.5	2.7	2.4	2.2	2.3	2.4	incr**
Willow Flycatcher	2.3	2.5	2.8	3.1	4.6	3.1	4.0	3.1	3.5	3.6	3.7	3.8	3.5	2.6	2.5	3.5	invu*
Least Flycatcher	4.5	4.5	5.6	6.2	6.9	7.4	7.4	6.0	6.4	6.6	6.3	6.5	6.8	5.8	6.3	6.7	invu**
Eastern Phoebe	15.9	15.0	18.8	17.3	18.9	16.1	19.0	21.3	21.5	18.7	19.5	24.7	23.7	24.5	24.8	27.9	incr***
Great Crested Flycatcher	13.0	13.6	14.5	14.6	15.6	15.5	14.4	13.7	14.2	13.9	13.2	13.9	12.2	11.9	13.6	12.5	decr*
Western Kingbird ^b											0.1	0.0	0.0	0.2	0.0	0.0	
Eastern Kingbird	18.3	19.9	19.9	21.1	21.4	20.7	20.5	20.3	19.4	20.3	18.4	18.7	16.4	16.6	19.5	19.3	stbl
Horned Lark	19.5	19.9	23.5	19.3	19.8	20.6	21.0	20.1	19.6	20.3	21.0	19.3	17.8	16.9	16.1	14.8	decr**
Purple Martin	12.1	13.2	12.3	14.7	12.2	13.2	10.2	10.3	10.1	10.5	8.6	8.1	8.1	6.2	7.5	8.1	decr***
Tree Swallow	29.2	30.0	28.9	29.6	31.7	29.2	29.7	30.5	30.4	31.2	31.3	31.6	29.6	28.5	29.9	30.8	stbl
Northern Rough-winged Swallow	6.1	6.6	7.1	7.5	7.5	7.5	7.4	7.7	7.4	8.0	7.1	6.7	7.1	6.5	7.8	8.3	stbl
Bank Swallow	4.4	3.9	3.3	4.8	5.2	4.5	5.1	3.4	4.5	4.9	3.8	3.6	4.1	3.1	3.2	4.4	stbl
Cliff Swallow	8.0	8.6	7.7	8.1	8.6	8.5	8.3	9.4	9.2	9.4	8.4	10.1	7.3	7.4	7.2	5.7	invu**
Barn Swallow	27.8	28.0	27.6	28.8	29.8	28.1	29.0	28.2	28.1	30.5	27.7	26.9	25.6	24.5	26.5	26.1	decr*
Gray Jay	2.4	2.1	1.7	1.0	0.5	1.2	0.7	0.9	1.0	0.9	0.6	0.5	0.3	0.4	0.6	1.0	decr**

Table 2. Continued

Species	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	Trend
Blue Jay	81.2	82.3	81.6	82.9	83.4	82.4	83.7	84.7	85.5	81.4	81.9	81.4	77.8	80.0	82.6	81.8	stbl
American Crow	89.0	89.2	89.2	88.2	89.7	91.2	90.7	92.6	93.0	92.0	91.5	91.7	89.5	91.7	91.9	91.2	incr*
Common Raven	12.3	11.6	11.5	11.5	10.0	12.7	13.3	14.0	16.6	15.5	13.2	15.8	13.5	14.2	13.9	14.4	incr**
Black-capped Chickadee	80.0	82.9	81.8	83.4	83.6	83.1	84.8	87.0	87.3	84.9	84.9	87.2	87.4	89.4	88.5	88.1	incr***
Boreal Chickadee	0.3	0.1	0.3	0.1	0.2	0.2	0.1	0.2	0.0	0.1	0.1	0.2	0.0	0.1	0.0	0.1	decr*
Tufted Titmouse	4.5	5.7	4.2	2.8	2.9	2.1	2.6	3.4	5.5	4.8	5.7	5.2	7.5	8.1	9.1	8.8	incr***
Red-breasted Nuthatch	16.0	13.9	22.9	29.5	16.3	15.2	27.4	24.9	29.8	28.4	31.8	28.0	27.6	25.3	27.9	21.2	incr*
White-breasted Nuthatch	63.7	65.1	65.2	66.8	65.8	64.6	66.7	69.0	68.7	62.9	63.7	68.6	70.6	70.0	73.8	73.7	incr**
Brown Creeper	7.7	9.3	10.3	9.1	9.8	13.4	12.0	11.2	12.5	10.5	9.5	10.5	8.3	7.7	7.2	8.9	invu**
Carolina Wren ^b											0.1	0.1	0.2	0.0	0.2	0.0	
House Wren	23.7	20.7	24.2	26.6	27.9	24.9	25.0	25.1	24.8	22.4	23.2	24.8	26.7	26.3	26.4	24.0	stbl
Winter Wren	2.3	2.0	3.4	3.1	3.9	4.7	5.3	5.0	5.7	4.3	4.5	5.5	3.4	2.9	2.7	3.8	invu***
Sedge Wren	4.3	3.9	3.3	3.8	5.0	6.5	6.0	5.5	4.4	4.8	5.4	4.9	4.9	4.2	5.9	6.6	incr*
Marsh Wren	3.1	3.1	2.9	3.4	6.0	5.3	5.0	4.2	4.3	4.4	4.1	3.9	4.0	2.4	4.0	4.1	invu*
Golden-crowned Kinglet	6.9	7.0	7.1	8.1	10.0	9.2	9.2	8.0	9.6	5.6	6.2	8.1	7.5	7.5	4.8	6.9	stbl
Ruby-crowned Kinglet	5.9	6.6	9.2	7.5	10.0	8.3	7.9	10.0	9.3	8.2	8.1	7.3	7.2	6.9	6.4	9.4	stbl
Blue-gray Gnatcatcher	3.1	2.8	4.3	4.5	6.2	6.1	4.9	5.8	5.8	5.2	5.7	5.6	6.5	6.0	7.4	8.9	incr***
Eastern Bluebird	23.3	23.6	26.2	29.5	31.1	28.0	26.5	31.0	31.1	29.4	28.8	32.3	28.7	33.3	32.5	32.4	incr***
Veery	4.1	4.2	4.5	5.3	6.0	5.8	6.9	5.6	6.3	7.1	6.2	6.1	4.8	3.8	5.1	5.7	invu**
Gray-cheeked Thrush	0.7	1.0	1.0	1.3	1.4	1.6	1.9	1.0	1.5	1.6	1.6	0.9	0.7	0.9	0.6	0.6	invu***
Swainson's Thrush	2.7	2.7	2.9	3.5	4.5	3.3	4.7	2.7	4.6	3.9	4.2	3.8	3.6	2.8	3.0	3.3	invu*
Hermit Thrush	4.6	4.1	5.9	6.0	7.6	6.9	7.4	7.6	8.2	7.9	6.8	7.8	5.6	5.3	6.5	7.1	invu**
Wood Thrush	7.5	7.2	8.0	8.2	7.8	7.1	8.7	8.7	8.5	7.5	8.4	8.1	6.6	6.9	9.0	7.5	stbl
American Robin	64.8	64.4	65.2	67.9	66.7	67.1	63.3	67.0	65.5	64.7	65.1	68.5	68.0	69.4	64.3	67.8	stbl
Gray Catbird	24.3	23.5	25.1	26.0	28.8	27.3	27.9	25.9	25.3	23.7	24.0	24.2	25.2	26.6	29.5	28.0	stbl
Northern Mockingbird	0.3	0.1	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.6	0.2	0.2	0.2	stbl
Brown Thrasher	16.5	15.5	15.5	16.1	16.2	15.0	13.9	14.3	13.6	13.0	11.2	13.2	10.8	10.4	12.3	13.1	decr***
American Pipit	0.2	0.3	0.6	0.2	0.7	0.2	0.2	0.4	0.3	0.7	0.7	1.0	0.9	0.7	0.9	0.7	incr***
Bohemian Waxwing	0.6	1.1	0.8	0.8	0.2	0.5	0.3	0.4	0.2	0.2	0.3	0.6	0.8	0.7	0.7	0.6	ushp**
Cedar Waxwing	25.4	25.7	29.3	29.9	29.3	29.6	27.3	32.3	26.9	30.5	28.0	31.8	27.6	28.4	34.1	32.2	incr*
Northern Shrike	3.4	3.7	3.3	3.4	4.2	3.6	3.1	4.0	6.8	4.0	3.0	3.6	4.2	4.6	3.1	2.9	stbl
Loggerhead Shrike	0.2	0.3	0.6	0.2	0.7	0.6	0.1	0.3	0.5	0.4	0.3	0.2	1.0	0.6	0.5	0.5	stbl
European Starling	81.4	79.1	80.6	79.0	80.5	81.6	81.3	79.6	79.6	77.2	76.2	76.1	72.6	74.1	73.2	68.7	decr***
White-eyed Vireo ^b											0.1	0.1	0.1	0.1	0.2	0.1	
Bell's Vireo	0.1	0.0	0.0	0.3	0.4	0.2	0.5	0.1	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.3	stbl
Solitary Vireo	0.9	1.1	1.4	2.1	2.1	1.9	2.2	2.2	2.3	2.1	2.3	1.4	1.7	1.7	2.0	2.9	incr*
Yellow-throated Vireo	2.5	2.8	4.5	4.2	5.8	4.5	4.0	4.8	4.3	4.0	4.4	4.4	4.0	3.4	4.4	4.5	stbl
Warbling Vireo	6.2	6.5	7.3	7.6	9.3	8.1	9.1	8.5	8.3	7.8	7.6	8.2	8.4	7.6	9.6	8.6	incr*
Philadelphia Vireo	1.2	1.0	1.0	1.5	1.6	1.2	1.0	1.4	1.0	1.3	1.2	1.0	0.9	0.8	1.0	1.7	stbl
Red-eyed Vireo	10.5	10.4	11.0	11.9	15.3	14.3	13.3	14.1	13.1	14.9	14.1	15.6	13.8	14.4	15.8	14.7	incr***
Blue-winged Warbler	2.4	2.7	3.2	2.7	3.4	3.5	4.1	3.8	3.5	3.6	3.9	3.6	3.2	3.1	3.8	3.8	incr*
Golden-winged Warbler	1.5	1.7	2.0	2.8	2.6	2.8	3.3	2.5	2.1	2.9	3.0	2.6	1.9	1.8	1.9	2.8	invu*
Tennessee Warbler	4.3	3.2	3.7	3.9	6.1	4.4	4.6	3.9	4.1	4.2	4.2	4.3	4.0	3.9	3.8	4.9	stbl

Table 2. Continued

Species	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	Trend
Orange-crowned Warbler	0.9	1.2	1.4	1.4	1.8	1.5	1.4	1.1	1.2	1.4	1.5	0.9	1.1	0.8	0.9	1.6	stbl
Nashville Warbler	3.1	2.8	4.1	4.5	5.6	6.5	5.9	5.6	6.3	6.6	7.0	5.0	5.3	4.3	4.8	6.4	invu**
Northern Parula	0.8	1.2	1.3	1.7	2.0	1.5	1.4	2.1	1.7	2.5	2.4	1.4	1.3	1.5	2.0	3.1	incr*
Yellow Warbler	9.3	9.4	11.4	12.1	13.0	12.4	12.7	12.0	13.0	13.3	12.1	10.3	10.8	10.5	12.6	13.8	stbl
Chestnut-sided Warbler	3.7	4.7	4.4	6.1	6.1	6.4	7.2	6.6	6.3	7.7	6.7	5.9	5.7	5.4	6.6	7.1	incr*
Magnolia Warbler	2.9	3.1	3.8	4.7	5.3	4.9	5.4	4.2	4.7	5.7	5.1	3.7	4.2	3.5	4.0	6.0	stbl
Cape May Warbler	1.8	1.6	2.1	1.6	2.5	2.0	2.8	1.8	2.2	3.0	1.9	1.7	1.8	1.4	2.3	2.7	stbl
Black-throated Blue Warbler	0.4	0.6	0.5	0.8	0.9	0.6	0.8	0.8	1.0	0.9	1.2	0.7	0.8	0.5	0.4	1.7	stbl
Yellow-rumped Warbler	11.8	11.5	13.5	13.9	15.2	12.9	13.7	15.2	15.7	15.9	14.7	14.5	11.3	11.7	12.6	15.6	stbl
Black-throated Green Warbler	2.9	3.0	4.2	5.0	5.7	6.4	6.3	6.1	5.9	6.7	6.3	5.8	5.8	5.5	6.0	6.5	incr**
Blackburnian Warbler	1.6	2.0	2.7	3.5	2.8	3.4	3.8	2.9	3.3	4.2	3.9	2.0	2.6	2.4	1.8	3.6	invu*
Yellow-throated Warbler ^b												0.3	0.4	0.4	0.4	0.1	0.1
Pine Warbler	1.1	0.8	1.1	2.1	3.1	2.0	2.1	3.0	2.8	3.0	2.0	2.8	1.7	2.1	3.0	2.8	incr*
Prairie Warbler ^b											0.0	0.0	0.2	0.0	0.1	0.1	
Palm Warbler	3.9	3.9	5.4	5.6	5.9	5.8	4.8	6.2	5.9	6.1	6.6	4.6	4.5	3.9	4.7	7.6	stbl
Bay-breasted Warbler	1.4	1.6	1.5	1.8	2.7	2.6	2.4	1.8	1.7	2.1	2.3	1.5	1.4	1.1	1.9	2.0	stbl
Blackpoll Warbler	1.1	1.3	1.4	1.6	2.9	1.8	2.6	1.6	2.1	2.3	2.0	2.2	1.9	1.3	1.4	2.3	invu*
Cerulean Warbler	0.6	0.5	0.5	0.6	0.8	0.9	0.8	0.6	0.7	0.7	0.4	0.3	0.6	0.6	0.7	0.7	stbl
Black-and-white Warbler	3.3	4.1	5.6	6.2	6.7	6.6	7.0	6.7	6.4	7.4	7.0	5.2	4.9	4.7	5.5	7.1	invu*
American Redstart	6.0	6.7	8.2	9.1	10.8	9.8	9.7	10.0	10.1	10.6	10.8	9.1	8.9	8.0	9.3	11.1	invu*
Prothonotary Warbler	0.4	0.3	0.6	0.4	0.4	0.6	0.7	0.7	0.6	0.9	0.3	0.7	0.7	0.5	0.5	0.5	invu*
Worm-eating Warbler ^b											0.1	0.0	0.0	0.1	0.1	0.2	
Ovenbird	7.8	8.4	9.0	10.0	10.2	9.8	11.1	10.9	10.3	11.0	10.8	11.0	8.8	9.6	10.8	10.7	incr*
Northern Waterthrush	2.1	2.0	3.1	3.4	3.6	3.5	3.2	3.5	3.2	4.0	3.7	3.4	2.8	2.9	3.1	3.4	invu**
Louisiana Waterthrush	0.5	0.4	0.5	0.4	0.6	0.5	0.7	0.4	0.3	0.4	0.3	0.3	0.4	0.5	0.1	0.3	decr*
Kentucky Warbler	0.3	0.2	0.3	0.2	0.3	0.3	0.2	0.1	0.1	0.3	0.2	0.1	0.1	0.1	0.1	0.0	decr**
Connecticut Warbler	0.5	0.5	0.8	0.5	0.7	0.6	0.6	0.6	0.9	1.1	0.9	0.5	0.4	0.4	0.4	0.7	stbl
Mourning Warbler	1.6	1.6	2.3	2.6	2.8	3.1	3.6	3.1	3.4	4.2	3.9	3.5	2.5	2.6	2.6	3.9	incr*
Common Yellowthroat	14.7	15.2	16.3	16.4	19.6	18.2	19.7	18.3	17.8	17.9	17.5	17.5	16.0	15.6	18.2	17.5	invu*
Hooded Warbler	0.2	0.3	0.2	0.3	0.2	0.1	0.3	0.2	0.3	0.1	0.3	0.5	0.2	0.3	0.2	0.8	stbl
Wilson's Warbler	0.9	1.5	1.5	2.1	2.2	2.8	2.2	1.6	2.1	3.0	3.2	1.7	2.1	1.8	1.2	3.6	stbl
Canada Warbler	0.9	1.4	1.8	1.8	2.3	2.5	2.2	1.7	2.2	3.4	2.4	1.7	1.8	1.4	1.3	2.1	invu**
Yellow-breasted Chat	0.2	0.2	0.1	0.2	0.1	0.2	0.3	0.1	0.1	0.1	0.2	0.0	0.1	0.0	0.3	0.2	stbl
Scarlet Tanager	4.7	5.5	6.5	6.3	8.6	8.0	7.8	7.4	7.0	6.4	7.0	8.5	6.0	6.7	8.7	8.8	incr*
Northern Cardinal	67.5	67.4	69.6	71.7	75.2	73.5	72.7	74.2	74.7	70.8	71.8	75.4	76.3	77.2	77.5	74.5	incr***
Rose-breasted Grosbeak	15.6	16.0	17.8	19.6	20.2	19.9	20.0	20.2	21.1	20.1	20.7	18.4	18.7	18.0	21.7	23.2	incr*
Indigo Bunting	13.3	13.2	14.2	15.4	16.6	16.7	17.2	15.5	16.2	16.7	15.5	14.7	16.2	15.6	18.9	18.0	incr**
Dickcissel	1.0	2.2	1.6	1.5	2.6	1.8	0.9	1.0	1.8	1.9	1.1	1.5	1.8	2.5	1.4	1.7	stbl
Eastern Towhee	11.1	10.2	9.9	9.4	11.7	10.6	10.8	10.3	10.6	9.6	9.5	9.2	7.7	8.8	10.2	10.3	stbl
American Tree Sparrow	13.6	17.4	21.0	21.3	20.9	19.8	19.9	22.0	24.6	21.5	20.5	20.0	22.2	22.8	21.0	18.6	invu**
Chipping Sparrow	26.8	26.8	28.7	29.7	31.7	28.5	29.7	30.3	29.2	31.7	31.3	32.2	30.8	32.5	32.9	32.0	incr***
Clay-colored Sparrow	2.4	2.5	2.6	3.1	3.7	3.4	3.5	3.8	3.8	4.1	4.6	4.3	3.4	3.6	3.9	4.4	incr***
Field Sparrow	15.3	13.7	14.8	13.7	16.0	13.0	14.4	13.7	13.0	12.7	12.5	12.9	11.0	11.7	12.1	10.9	decr***

Table 2. Continued

Species	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	Trend
Vesper Sparrow	6.1	6.7	6.6	7.3	6.7	6.3	6.1	6.7	6.3	6.6	6.1	5.7	4.0	3.1	3.2	3.8	decr***
Lark Sparrow	0.2	0.2	0.3	0.5	0.5	0.3	0.3	0.5	0.4	0.3	0.2	0.3	0.2	0.3	0.1	0.1	invu**
Savannah Sparrow	10.0	10.1	11.3	11.6	13.5	12.5	12.2	13.0	11.8	12.9	13.7	13.2	10.7	8.8	11.6	11.0	invu**
Grasshopper Sparrow	1.6	1.0	1.7	2.3	4.0	3.4	2.1	1.8	2.0	1.7	1.5	2.3	1.7	1.6	1.6	1.2	stbl
Henslow's Sparrow	0.9	0.6	0.3	0.5	0.8	0.9	0.3	0.4	0.3	0.3	0.3	0.8	0.3	0.5	0.7	0.9	ushp*
Le Conte's Sparrow	0.3	0.3	0.2	0.5	0.7	0.4	0.2	0.5	0.5	0.5	0.3	0.3	0.4	0.2	0.2	0.4	stbl
Nelson's Sharp-tailed Sparrow ^b											0.0	0.0	0.0	0.0	0.0	0.0	
Fox Sparrow	6.2	6.4	7.0	6.4	8.9	7.3	7.0	5.9	7.1	5.4	5.4	5.0	6.2	6.8	5.1	5.3	decr*
Song Sparrow	40.8	39.6	42.9	43.8	46.4	45.5	44.0	45.3	46.6	46.0	44.4	43.4	40.2	45.8	42.5	41.6	invu**
Lincoln's Sparrow	1.2	1.1	1.7	1.8	2.4	2.2	1.6	1.8	1.5	2.5	2.6	2.0	2.1	1.5	1.5	2.7	stbl
Swamp Sparrow	8.8	8.0	9.7	9.7	13.8	10.5	10.5	10.3	10.1	10.0	8.8	9.4	9.0	6.8	8.2	8.2	invu*
White-throated Sparrow	13.8	13.1	15.5	16.1	19.0	18.8	18.0	18.9	21.1	18.6	18.4	19.8	16.5	17.5	18.3	23.8	incr**
White-crowned Sparrow	3.0	3.5	3.6	4.6	4.6	3.7	3.5	3.4	4.5	3.4	5.4	5.0	5.7	4.6	5.6	5.7	incr***
Harris' Sparrow	0.6	0.5	0.5	0.9	0.1	0.5	0.3	0.2	0.2	0.5	0.6	1.0	0.7	0.6	0.8	1.1	ushp**
Dark-eyed Junco	42.7	45.0	43.9	43.3	45.8	42.4	44.9	46.0	47.8	42.6	44.7	46.3	48.4	48.9	46.1	45.9	incr*
Lapland Longspur	1.7	1.1	0.9	1.0	1.4	1.0	0.8	0.9	1.1	0.9	1.7	2.2	2.8	2.4	1.8	1.5	incr*
Snow Bunting	3.5	4.5	5.1	2.8	3.4	3.9	3.5	3.2	3.0	4.4	5.3	3.4	4.6	4.4	3.9	3.3	stbl
Bobolink	7.3	7.5	7.3	6.9	9.0	7.9	9.0	8.1	7.2	9.0	9.3	7.8	6.5	5.2	6.0	7.2	invu*
Red-winged Blackbird	52.6	50.9	50.6	56.4	54.9	55.6	52.5	54.1	51.8	55.0	54.6	52.6	50.2	53.1	51.4	52.5	stbl
Eastern Meadowlark	26.2	23.9	24.3	26.1	28.8	27.2	25.9	25.8	25.8	23.1	22.7	22.2	19.3	18.4	18.3	15.0	decr***
Western Meadowlark	7.1	6.0	7.1	5.3	6.8	6.2	5.2	4.4	3.8	3.5	2.7	3.5	2.1	2.4	1.7	2.4	decr***
Yellow-headed Blackbird	4.6	4.5	5.1	4.5	5.4	4.5	4.0	4.7	3.8	3.9	4.4	4.5	3.6	3.0	3.2	3.9	decr**
Rusty Blackbird	2.8	2.7	2.8	1.9	2.9	2.7	2.5	2.3	1.9	2.0	2.0	2.5	2.6	1.7	1.5	1.4	decr**
Brewer's Blackbird	6.7	5.7	5.0	7.4	7.7	6.4	6.1	5.3	4.6	4.3	3.3	4.4	3.8	4.3	3.9	2.9	decr***
Common Grackle	53.6	52.1	51.4	52.9	51.9	53.8	47.6	50.2	46.6	46.7	45.2	44.1	41.5	43.3	40.4	41.4	decr***
Brown-headed Cowbird	25.8	25.9	26.7	28.5	28.8	26.9	29.1	27.4	25.7	26.7	25.6	27.0	26.0	26.3	24.8	24.4	invu*
Orchard Oriole	0.4	0.5	0.4	0.5	0.9	0.8	1.0	0.6	0.7	1.0	0.9	0.7	1.3	1.4	1.6	2.8	incr***
Baltimore Oriole	17.2	18.6	18.8	19.6	19.1	18.2	18.6	18.4	18.1	18.5	17.7	17.3	17.2	16.5	20.1	21.0	stbl
Pine Grosbeak	0.8	1.2	2.0	4.5	0.6	0.9	0.6	0.6	0.9	1.1	1.6	1.6	0.6	0.7	1.1	0.9	stbl
Purple Finch	22.7	23.3	21.0	25.3	22.0	20.9	22.1	16.6	22.4	20.5	19.9	16.9	20.6	19.3	19.5	13.1	decr**
House Finch ^c					19.6	44.6	53.9	61.5	60.6	60.4	57.6	61.5	63.4	63.9	59.0	56.6	incr*
Red Crossbill	1.1	2.9	0.5	1.6	0.7	0.3	0.6	0.4	0.7	0.8	0.6	0.5	0.5	0.2	0.8	0.2	decr*
White-winged Crossbill	0.8	0.7	1.6	3.4	0.1	0.2	0.5	0.4	0.4	0.9	0.8	0.2	0.2	0.2	0.7	0.3	stbl
Common Redpoll	4.7	4.6	2.9	8.0	3.1	7.6	2.3	5.9	2.6	12.5	3.5	6.8	3.0	5.6	2.1	3.2	stbl
Pine Siskin	25.8	28.9	13.5	33.6	9.0	11.0	12.5	9.0	11.4	20.1	9.3	9.2	11.4	10.1	13.1	7.2	decr*
American Goldfinch	72.4	76.6	74.7	77.7	75.8	71.9	77.3	73.6	75.4	75.7	75.2	77.0	77.7	80.1	82.3	79.5	incr**
Evening Grosbeak	11.3	9.4	5.8	7.9	5.7	5.4	6.0	5.8	6.4	6.8	5.5	5.5	4.3	5.3	6.2	5.0	decr**
House Sparrow	84.3	82.4	84.2	82.1	81.5	81.6	79.1	80.9	80.3	74.8	74.9	74.0	73.8	73.9	73.3	70.9	decr***

^a stbl = stable: regression equations with $P \geq 0.05$, incr = increasing: significant linear regressions with positive slopes, decr = decreasing: significant linear regressions with negative slopes, ushp = u-shaped: significant u-shaped quadratic trend, invu = inverted-u: significant inverted u-shaped quadratic trend. * = $0.05 > P \geq 0.01$, ** = $0.01 > P \geq 0.001$, *** = $P < 0.001$.

^b Species added to checklist in 1997.

^c House Finch was added to checklist in 1991.